

## CLAIMS

What is claimed is:

1. A method of making an OLED display panel, wherein a light-emitting display array is formed on a substrate comprising:

5        forming a plurality of grooves on said substrate, said grooves are parallel to a vertical direction;

         forming a plurality of first electrode lines in said grooves;

         forming a cavity matrix on said first electrode lines;

10        filling an organic light-emitting layer in the cavities of said cavity matrix to form an organic light-emitting matrix; and

         forming a plurality of second electrode lines on said substrate and said organic light-emitting layer, said second electrode lines are parallel to a horizontal direction for connecting said organic light-emitting layer with the same horizontal position.

15        2. The method of claim 1, wherein said first electrode lines are made of indium tin oxide film and said second electrode lines are made of metal thin film.

         3. The method of claim 1, wherein said grooves and said cavity matrix are formed using excimer laser.

         4. The method of claim 1, wherein the step of forming a first electrode lines in said grooves comprises:

20        depositing an indium tin oxide thin film on said substrate, whereby said grooves are filled by said indium tin oxide thin film; and

         removing extra part of said indium tin oxide thin film which is on said substrate

485/27

surface and beyond the top of said grooves with chemical mechanical polishing.

5. The method of claim 1, wherein said organic light-emitting layer is formed in every said cavity by inkjet printing.

6. The method of claim 1, wherein the step of filling an organic light-emitting layer in the cavities of said cavity matrix to form an organic light-emitting matrix comprises;

forming an organic light-emitting layer on said substrate using thermal evaporation, whereby said cavities are filled with said organic light-emitting layer; and

removing extra part of said organic light-emitting layer which is on said substrate surface and beyond the top of said cavities using chemical mechanical polishing.

7. A method of making an OLED display panel, wherein a full color light-emitting display array is formed on a substrate comprising:

forming a plurality of grooves on said substrate, said grooves are parallel to a vertical direction;

forming a plurality of first electrode lines in said grooves;

forming a cavity matrix on said first electrode lines;

filling an organic light-emitting layer in the cavities of said cavity matrix to form an organic light-emitting matrix;

repeating above steps three times to form red-green-blue three-color organic light-emitting matrix; and

forming a plurality of second electrode lines on said substrate and said organic light-emitting layer, said second electrode lines are parallel to a horizontal direction for connecting said organic light-emitting layers with the same horizontal position.

8. The method of claim 7, wherein said first electrode lines are made of indium tin oxide film and said second electrode lines are made of metal thin film.

9. The method of claim 7, wherein said grooves and said cavity matrix are formed using excimer laser.

5           10. The method of claim 7, wherein the step of forming a first electrode lines in said grooves comprises:

          depositing an indium tin oxide thin film on said substrate, whereby said grooves are filled by said indium tin oxide thin film; and

10           removing extra part of said indium tin oxide thin film which is on said substrate surface and beyond the top of said grooves with chemical mechanical polishing.

          11. The method of claim 7, wherein said organic light-emitting layer is form in every said cavity by inkjet printing.

          12. The method of claim 7, wherein the step of filling an organic light-emitting layer in the cavities of said cavity matrix to form an organic light-emitting matrix comprises;

15           forming an organic light-emitting layer on said substrate using thermal evaporation, whereby said cavities are filled with said organic light-emitting layer; and

          removing extra part of said organic light-emitting layer which is on said substrate surface and beyond the top of said cavities using chemical mechanical polishing.

          13. An OLED display panel, comprising:

20           a substrate, on which a plurality of grooves are formed, said grooves are parallel to a vertical direction;

          a plurality of electrode lines filled in said grooves;

          a cavity matrix on said first electrode line, each cavity of the cavity matrix is filled in

an organic light-emitting layer; and

a plurality of second electrode lines on said substrate and said organic light-emitting layer, said second electrode lines are parallel to a horizontal direction for connecting said organic light-emitting layer with the same horizontal position.

5        14. The OLED display panel of claim 13, wherein said first electrode lines are made of indium tin oxide film and said second electrode lines are made of metal thin film.

15. The OLED display panel of claim 13, wherein said organic light-emitting layer comprises a plurality of organic thin films.

5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100